

## Mentha Oil

### *Oleum Menthae Japonicae*

ハッカ油

Mentha Oil is the essential oil which is distilled with steam from the terrestrial parts of *Mentha arvensis* Linné var. *piperascens* Malinvaud (*Labiatae*), and from which solids are removed after cooling.

It contains not less than 30.0% of menthol ( $C_{10}H_{20}O$ : 156.27).

**Description** Mentha Oil is a colorless or pale yellow, clear liquid. It has a characteristic, pleasant aroma and has a pungent taste, followed by a cool aftertaste.

It is miscible with ethanol (95), with ethanol (99.5), with warm ethanol (95), and with diethyl ether.

It is practically insoluble in water.

**Refractive index**  $n_D^{20}$ : 1.455 – 1.467

**Optical rotation**  $\alpha_D^{20}$ : –17.0 – –36.0° (100 mm).

**Specific gravity**  $d_{25}^{25}$ : 0.885 – 0.910

**Acid value** Not more than 1.0.

**Purity (1)** Clarity and color of solution—To 1.0 mL of Mentha Oil add 3.5 mL of diluted ethanol (7 in 10), and shake: Mentha Oil dissolves clearly. To the solution add 10 mL of ethanol (95): the solution is clear or has no more turbidity, if any, than the following control solution.

Control solution: To 0.70 mL of 0.01 mol/L hydrochloric acid VS add 6 mL of dilute nitric acid and water to make 50 mL, add 1 mL of silver nitrate TS, and allow to stand for 5 minutes.

(2) Heavy metals—Proceed with 1.0 mL of Mentha Oil according to Method 2, and perform the test. Prepare the control solution with 4.0 mL of Standard Lead Solution (not more than 40 ppm).

**Assay** Weigh accurately about 5.0 g of Mentha Oil, and dissolve in ethanol (95) to make exactly 20 mL. Pipet 10 mL of this solution, add exactly 10 mL of the internal standard solution, and use this solution as the sample solution. Separately, weigh accurately about 10.0 g of *l*-menthol for assay, and dissolve in ethanol (95) to make exactly 100 mL. Pipet 10 mL of this solution, add exactly 10 mL of the internal standard solution, and use this solution as the standard solution. Perform the test with 1  $\mu$ L each of the sample solution and the standard solution as directed under the Gas Chromatography according to the following conditions. Calculate the ratios,  $Q_T$  and  $Q_S$ , of the peak area of menthol to that of the internal standard.

$$\begin{aligned} \text{Amount (mg) of } C_{10}H_{20}O \\ &= \text{amount (mg) of } l\text{-menthol for assay} \\ &\quad \times \frac{Q_T}{Q_S} \end{aligned}$$

**Internal standard solution**—A solution of *n*-ethyl caprylate in ethanol (95) (4 in 100).

**Operating conditions**—

Detector: A hydrogen flame-ionization detector.

Column: A glass column about 3 mm in inside diameter

and about 2 m in length, packed with 25% of polyethylene glycol 6000 for gas chromatography supported on acid-washed 180–250  $\mu$ m siliceous earth for gas chromatography.

Column temperature: A constant temperature of about 150°C.

Carrier gas: Nitrogen.

Flow rate: Adjust the flow rate so that the retention time of the internal standard is about 10 minutes.

Selection of column: Proceed with 1  $\mu$ L of the standard solution under the above operating conditions, and calculate the resolution. Use a column giving elution of the internal standard and *l*-menthol in this order with the resolution between these peaks being not less than 5.

**Containers and storage** Containers—Tight containers.

Storage—Light-resistant.

## Mentha Water

ハッカ水

### Method of preparation

Mentha Oil	2 mL
Purified Water	a sufficient quantity
To make 1000 mL	

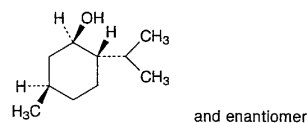
Prepare as directed under Aromatic Waters, with the above ingredients.

**Description** Mentha Water is a clear, colorless liquid, having the odor of mentha oil.

**Containers and storage** Containers—Tight containers.

## *dl*-Menthol

*dl*-メントール



$C_{10}H_{20}O$ : 156.27  
(1*RS*,2*SR*,5*RS*)-2-Isopropyl-5-methylcyclohexanol  
[15356-70-4]

*dl*-Menthol contains not less than 98.0% of  $C_{10}H_{20}O$ .

**Description** *dl*-Menthol occurs as colorless crystals. It has a characteristic and refreshing odor and a burning taste, followed by a cool taste.

It is very soluble in ethanol (95) and in diethyl ether, and very slightly soluble in water.

It sublimates gradually at room temperature.

**Identification (1)** Triturate *dl*-Menthol with an equal